论文与报告

基于D-S证据理论的彩色航空影像阴影提取方法

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摘要
阴影特征在影像, 特别是遥感影像中具有重要的意义. 本文针对彩色航空遥感影像的颜色信息进行分析, 提出了表述阴影在 RGB 和 HIS 空间的三种不同特征, 并利用 Mean Shift 分割的方法对彩色航空影像进行区域分割. 选取分割后的区域, 统计每个区域的多个颜色特征并定义相应的概率分配函数, 利用其互补特性, 使用 Dempster-Shafer(D-S) 证据理论中的合成法则对其进行合成, 最终判别区域是阴影或非阴影. 对实验图像进行阴影特征提取, 取得了较好的效果

关键词　Dempster-Shafer(D-S)证据理论　阴影提取　彩色航空影像

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A New Shadow Extraction Method from Color Aerial Images Based on Dempster-Shafer Evidence Theory

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Abstract
Shadows play an important role in our understanding of imagery especially the remote sensing imagery. According to the color features of shadow in the color aerial images, a new approach is proposed to extract shadow from color aerial images based on the Dempster-Shafer (D-S) evidence theory. Firstly three different feature descriptions of shadow in RGB and HIS spaces are introduced, then the image is segmented based on Mean Shift method, the color features of the segmented regions are computed and the basic probability assignment function (BPAF) of each segment is defined respectively. By using of the complementary characteristics of such three color features, the D-S rule is applied to the fusion of BPAF. Finally, the BPAF fusion is utilized to find the conclusive shadow segments. Experimental image analysis results demonstrate that the proposed method is effective and robust.

Key words　Dempster-Shafer(D-S) theory of evidence　shadow extraction　color aerial image

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